MASS. EA10.2:R29

October 17, 1995

UMASS/AMHERST

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REPORT ON POLICY FOR OFF ROAD VEHICLE USE IN MASSCHUSETTS FORESTS AND PARKS

EXECUTIVE SUMMARY

This report was prepared for the Board of Environmental Management, the Governor-appointed body which advises the Commissioner of the Department of Environmental Management (DEM) on policy matters. The Department has proposed a policy that would limit the use of motorized Off-Road Vehicles (ORVs) in the State Forests and Parks to events authorized by Special Use Permit. DEM believes that ORV use in State Forests, as it is presently ocurring, is incompatible with its statutory and policy mandate to protect natural resources, minimize conflicting recreational uses, and protect people from excessive noise. ORV use directly conflicts with this mandate as is demonstrated by:

Legal Issues, DEM Statutory Responsibilities

- DEM's non-compliance with laws and regulations by accomodating ORV use under the present policy: The Massachusetts Endangered Species Act (MGL Ch.131A and 321 CMR 10.00), Massachusetts Wetlands Protection Act (MGL Ch.131 § 40), Massachusetts Snowmobile and Recreational Vehicle Act (MGL Ch.90B § 26), Division of Environmental Law Enforcement regulations (323 CMR 3.03).

Trail Damage; Soil Erosion

- Physical damage to trail surfaces in the form of soil erosion, mud holes, and trail widening caused by ORV passage.
- The disproportionate level of impact caused by ORVs when compared with other recreational activities.
- Cumulative nature of these impacts.

Recreational User Conflict

- Direct confrontation with non-motorized users - noise, safety issues.
- Displacement of non-motorized recreationists due to ORV noise and safety issues, and physically impacted trails.

Management Issues

- Considerable commitment of staff, equipment, materials and time that would be required to adequately maintain a trail system for ORVs and other uses, as well as resource conservation.
- Only 7.2% of park visitors, and 1.1% of the state as a whole use ORVs.
- New, illegally cut ORV trails.
- ORV trespass onto adjacent private and public lands.
- Difficulty interpreting and enforcing current ORV regulations.
- Proposal implements recommendations of the 1992 Generic Environmental Impact Report (GEIR) on forestry practices.

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The Department of Environmental Management (DEM) has proposed a regulatory and policy change that would **limit the use of motorized Off-Road Vehicles (ORVs) in the State Forests and Parks to events authorized by Special Use Permit.** Appropriate trails in the Freetown, F. Gilbert Hills, Georgetown-Rowley, Brimfield, Savoy Mountain, Pittsfield, October Mountain, Beartown, and Tolland State Forest management units would be available for ORV events. This proposal is the product of an almost four-year policy review process undertaken at the request of the Board of Environmental Management in 1992.

The nature of the proposal, significantly limiting ORV use, is due to a broad range of concerns associated with this use on public lands. These problems - legal issues, resource impacts, recreational conflicts, management issues - have been identified by DEM through application of a comprehensive set of criteria designed to evaluate the suitability of State Forest and Parks facilities for ORV recreation, and through other research. This report briefly outlines the most significant issues that have led to the "events-only" proposal for ORVs.

Legal and Policy Context for ORV Management

The Division of Forests and Parks' enabling legislation, other Massachusetts laws, and the Department's operating policies require that DEM manage its trail system in a way that protects natural resources, minimizes conflicting uses, and protects people from excessive noise. ORV use, as it is presently ocurring in many facilities, has been shown to conflict with these statutory and policy requirements:

MGL Ch. 132 (§ 38) provides that DEM "may lay out, construct, and maintain trails or paths through or over lands in state forests and public reservations." In response to this mandate regarding trails, DEM is guided by the following policy, approved by the DEM Board in 1992: "DEM's overriding responsibility is the long-term maintenance and enhancement of the quality, quantity, function, and integrity of the resources it manages. To fulfill its statutory responsibilities regarding trails, DEM will develop and manage a trail system that allows appropriate access to Massachusetts' natural, scenic, and historic environmental resources for residents and visitors to the state. DEM's trail system will be managed under a plan that both minimizes conflicting uses and protects the state's environmental resources for present and future generations. The Department must ensure that trail use does not cause irreparable damage to the public lands it manages."

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The Massachusetts Constitution, Article 97, states that, "... people shall have the right to freedom from excessive and unnecessary noise."

The Massachusetts Snowmobile and Recreational Vehicle Act (MGL Ch.90B § 26) prohibits use in a reforested or planted area.

323 CMR 3.03 prohibits operation of ORVs within 300 feet of an occupied residence without owner's permission.

Rare Species and Habitat Impacts, Wetland Impacts

The Massachusetts Endangered Species Act (MGL Ch.131A and 321 CMR 10.00) prohibits disturbing certain species and habitats. By accommodating ORV use under the present policy, DEM may be in violation of this law. The Massachusetts Natural Heritage and Endangered Species program (MNHESP) has repeatedly advised DEM, in writing, of this fact: "We have determined that DEM is responsible for the management of more rare species habitat than any other single landowner in the Commonwealth. On DEM property, ORV damage is the most important issue facing your agency's management of rare species and their habitats" (letter from Henry Woolsey 6/17/94). The photos in Figures 1 and 2 show ORV impacts to habitats in Myles Standish State Forest.

While impacts to populations and habitats of listed rare and endangered species are a primary concern, the effects of ORV recreation on the greater, non-endangered flora and fauna are at odds with the Department's primary mission to protect natural resources. Boston University Professor Samuel Hammer, who has been studying sensitive sites at Myles Standish State Forest since 1992 writes that, "ORV disturbance is quantifiable, and it produces a measurable impact on diversity, species richness, and community structure in lichen, bryophyte, and vascular plant communities" (Fig. 3 & 4). An important element of the new policy will be continued natural resource inventory work, and ongoing, controlled monitoring of ORV impacts to these resources.

DEM may also be in violation of the **Massachusetts Wetlands Protection Act** (MGL Ch.131 § 40), which prohibits the altering of inland and coastal wetlands. ORV use has, in several cases, damaged wetland resources in the Forests and Parks (Fig. 5 & 7). The Criteria evaluations have revealed that many designated and non-designated ORV trails pass through estimated areas of rare wetlands wildlife habitat, and priority sites of rare species habitat (trails in Myles Standish, Otter River, Pittsfield, Savoy Mt., October Mt., Beartown, Georgetown-Rowley, Freetown, Douglas State Forests).

Trail Damage; Soil Erosion

Physical damage to trail surfaces in the form of soil erosion, mud holes, and trail widening caused by ORV passage is perhaps the most alarming problem associated with this use, and points to an incompatibility between everyday ORV use and effective resource stewardship. The accompanying photographs show that, despite the

1992 policy statement, ORV trail use has caused "irreparable damage" on DEM properties. Significant erosion or drainage problems attributed to ORV use were noted at each of the 12 DEM areas evaluated with the criteria.

Elementary physics and soil science tell us that there are two basic forces impacting the trail surface from the passage of ORVs: shear forces and compaction forces. These impacts have been documented in studies by the United States Geological Survey and others. Horizontal shear forces, which propel a vehicle forward (and soil backward) tend to be the most damaging to trails, and are what set ORVs apart from other trail uses. The force transferred to the trail surface from motorized drive wheels is more than most any soil structure short of solid rock can withstand. After spinning wheels loosen the trail surface, soil particles are easily moved by water, gravity, and subsequent trail users: erosion. On slopes, the greater force required to propel or slow down the vehicle is applied to the soil. Running water also has greater velocity and erosive force. Smaller, lighter soil particles are carried away first, leaving the familiar loose, rocky "cobbled" surface of many ORV trails, like the ones shown in Figures 9 and 11. This erosive process occurs on all soil types, but is most severe in sandy-textured soils with weak soil structure, such as those in Southeastern and North-central Massachusetts Accordingly, Myles Standish, Otter River and Freetown State Forests show some of the worst examples (Fig. 4, 8, 9, 12, 14, 16).

Vertical compaction forces are the result of gravity acting on the mass of the rider and machine, and are responsible for the creation of mudholes. As compaction occurs under the wheels of ORVs, the soil's infiltration rate is decreased, water collects and saturates the surrounding uncompacted soil. The product, mud, has a drastically reduced surface strength and is vulnerable to rutting, and to shear forces. Each vehicle that passes through the mudhole further compacts the underlying soil and impedes drainage, and each vehicle that goes around the mudhole compacts surrounding soil or disturbs trailside vegetation, widening the impacted area (Fig. 17-24). This process is most severe in shallow poorly drained soils such as those in the Berkshires.

Cumulative Effects

The habitat, wetlands, and soil erosion issues associated with ORV use on Forest and Park lands fit a pattern which is at odds with DEM's mission to protect the integrity of the natural resources it manages. These impacts also compromise DEM's ability to provide quality recreation opportunities for all, as is shown below.

It is important to note that these environmental impacts are **cumulative**. The problems first identified over three years ago have only worsened with time as more soil is lost and wider habitat areas are effected (Fig. 3 & 4). In many cases, no amount of maintenance can restore these areas to their pre-disturbed state. This process will continue without a comprehensive, statewide effort to limit ORV use.

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Recreational User Conflict

In addition to the physical impacts outlined above, ORVs were identified in the evaluation process, and have been frequently cited by Forest and Park visitors, as a source of significant user conflict. This indicates an incompatibility between ORV use and the recreational use of State Forests and Parks by the majority of the public.

The **noise** created by ORVs is not confined to the trails, and can potentially impact any visitor to a Forest or Park where ORV use is occurring. In 1992, DEM developed Geographic Information System (GIS)-based computer models of ORV noise in 13 Forests and Parks (see attached sample - Fig. 27). Using trail location, topography, and vegetation type data from the GIS, sound meter readings of off-road motorcycles and forest background noise, and known formulas for the attenuation of sound waves, the models produced maps which show where, relative to known trails, ORVs can be easily heard. The red areas on these maps indicate that there are no real "quiet zones" where visitors could be assured of not hearing ORVs. Even in the largest State Forests, virtually all day use areas, campgrounds, and other visitor sites fall within the red noise contours. This situation stands in conflict with visitors' expectations of peace and quiet in a State Forest and Park setting, and with their "right to freedom from excessive and unnecessary noise" under Article 97.

Although there have been few documented accidents or injuries involving motorized and non-motorized trail users, DEM has received numerous complaints of "near misses." These perceived or real **safety issues** can lead would-be visitors to stay away from certain Forests and Parks.

This **displacement of non-motorized recreationists** due to ORV noise and safety issues shows that user conflict does not require actual contact or confrontation between users. Likewise, hikers and other non-motorized users avoid trails and areas that have been damaged by ORV use. A case in point: Pittsfield State Forest staff report that 90% of trail users are motorized, even though the Taconic range is one of the most scenic hiking areas in the Commonwealth.

Management Issues

The criteria evaluations have shed light upon the **considerable management commitment** of staff, equipment, materials and time that would be required to adequately maintain a trail system for ORVs and other uses, as well as resource conservation. This is due largely to the **disproportionate level of impact of each ORV when compared with other recreational activities**. While trails could be built, at great expense, to withstand regular ORV use and be easily passable on foot, such hardened, engineered trails are generally not appropriate for natural areas. Furthermore, such a commitment may not be advisable given the relative size of the ORV user population. The 1994 Recreational Consumer Attitude Survey and 1995-2000 SCORP Demand Research show that **only 7.2% of park visitors, and 1.1% of the state population as a whole use ORVs**.

DEM staff have discovered entirely new, **illegally cut ORV trails** during the course of criteria evaluations at Myles Standish, F. Gilbert Hills, Douglas, Brimfield, and Otter River State Forests (Fig. 13 & 26). This problem has also been noted at numerous other DEM areas with and without existing designated ORV trails.

DEM has received numerous complaints of **ORV trespass onto private and public lands adjacent** to State Forests where ORV use occurs. Some of the effected landowners include Division of Fish and Wildlife, MDC, Army Corps of Engineers, National Park Service, Wompanoag Nation, Towns of Marlboro, Sudbury, Sudbury Valley Trustees, Mass. Audubon, Makepeace Cranberry Co., and Hancock Shaker Village.

The inadequacy of current ORV regulations is due in large part to difficulty encountered in interpreting and enforcing them. When an ORV user heads off into the woods, it can be nearly impossible to tell if he is using designated ORV trails or not. Merely communicating to users and enforcement personnel which areas and trails are designated for ORVs is complicated. One of the advantages of the events-only regulation is simplified enforcement: Unless a permitted event is taking place that day in that forest, any ORV seen or heard will be in violation.

Obviously it is unrealistic to expect 100% compliance. The majority of people are law-abiding and will comply with well communicated rules and regulations. Inevitably, some will not, and some policing will be necessary. Richard Murray, Director of the Division of Environmental Law Enforcement expects that initial enforcement costs may rise in first year or two after the new policy is adopted, and will then fall off.

By expanding the authority of DEM staff to enforce DEM regulations, the Department will soon be supplementing the services provided by the Environmental Police. An **in-house enforcement capability for DEM** will represent a significant increase over current enforcement levels, and will enable much improved coordination among park managers, enforcement personnel, and regional and Boston staff.

In 1992, DEM completed a **Generic Environmental Impact Report (GEIR)** on forestry practices. A section on ORV use, limited in scope to impacts to logging roads and water quality, was included when "concern was raised during the project scoping that ORV use on logging roads posed a greater potential threat to water quality than timber harvesting operation." The section concluded that these impacts were not significantly worse than those from logging operations, but also recommended that DEM implement a "comprehensive ORV Management Program."

DEM is now proposing, for the first time, a comprehensive ORV management program, based on the events-only approach. The GEIR report makes numerous specific recommendations related to ORVs, and it is expected that virtually all of these recommendations will be compatible with, or will be included in the new policy. Several have already been adopted.

It is anticipated that an **ORV Policy Working Group** will be formed to guide the formation and implementation of the new policy, building upon the events-only framework. The Working Group will be made up of representatives from DEM, Environmental Law Enforcement and other appropriate agencies, as well as representatives of ORV user groups and the Massachusetts Recreational Trails Advisory Board.

Massachusetts is a small, densely populated state, and faces unique challenges in providing ORV and other sustainable recreation opportunities. **Many alternatives were considered as a basis for a new policy, and the policies of other states were studied.** The "events-only" approach makes sense, especially when compared with those states geographically and demographically similar to Massachusetts. The attached list outlines the policies of various states.

The proposed policy does preserve some opportunity for ORV use in the Forests and Parks, and DEM program staff should be able to offer some assistance to ORV user organizations and industry in **identifying alternative, legal riding areas**. Currently, riding is sanctioned on several US Army Corps of Engineers Flood Control properties, as well as private motocross tracks. Additionally, opportunities may exist in legalized access to utility and transportation right-of-ways, and reuse of closed military facilities. The private sector and private landowners may also respond to a perceived unmet demand for riding areas.

ORV OPPORTUNITIES ON STATE FOREST, PARK LAND
(states not listed did not respond)

State	ORV Opportunities/Dedicated Funding
California	Several areas managed exclusively for use/ Puchased, developed with registration revenue.
Colorado	Some use on state lands, but mostly on federal/ Grant program funds federal, state, private projects with registration, gas tax revenue.
Connecticut	One general-use trail, otherwise events only in several state forests/None
Delaware	None/None.
Florida	Use on designated trails in some parks/None.
Georgia	None/None.
Illinois	None/None.
Indiana	None/None.
Iowa	None/Grant program to purchase and develop private riding areas.
Kansas	None/None.
Kentucky	None/None.
Maine	All Fish & Wildlife land (30-50,000 ac.) open unless posted closed, "Public Reserve Land" forestry lots closed unless designated (none designated), one designated trail in Mt. Blue State Park/Grant program for trail development on private, federal, state lands, from registration, gas tax revenue.
Maryland	2 remote, western state forests/None.
Michigan	Designated trails in state forests/Dedicated funds from registrations, gas tax revenue.
Minnesota	Designated logging roads in state forests/None.

Missouri	Designated trails in 2 state parks/None.
Montana	Designated trails/?
New Hampshire	Several ORV-specific trails, primarily under easement, use agreement with private landowners. No use on state park land/ORV program funds acquisition, development of riding areas, trails.
New Jersey	Events-only/None.
New York	None/None.
North Carolina	None/None.
Oklahoma	4 state parks, forests/None.
Oregon	None in state parks, some in state forests, most on federal lnads/Grants (mostly to feds) from gas tax revenue.
Pennsylvania	Multi-use trails in some state forests/Dedicated funds from registration fees.
Rhode Island	Events-only at one area, otherwise none/None.
South Carolina	None/None.
South Dakota	None/None.
Tennessee	Some fire roads in state forests/None.
Texas	None/None.
Utah	Some on state parks, most on federal land (70% of state)/Grant program.
Vermont	None/None.
Virginia	None/None.
Washington	Dedicated trails on state forests, federal lands/Grant program.
Wisconsin	Designated trails/grant program.

Sediment made available by ORV shear forces encroaching on pondshore

Fig. 1

MYLES STANDISH STATE FOREST

New Grassy Pond shore

Tire tracks through rare species habitat

Fig. 2

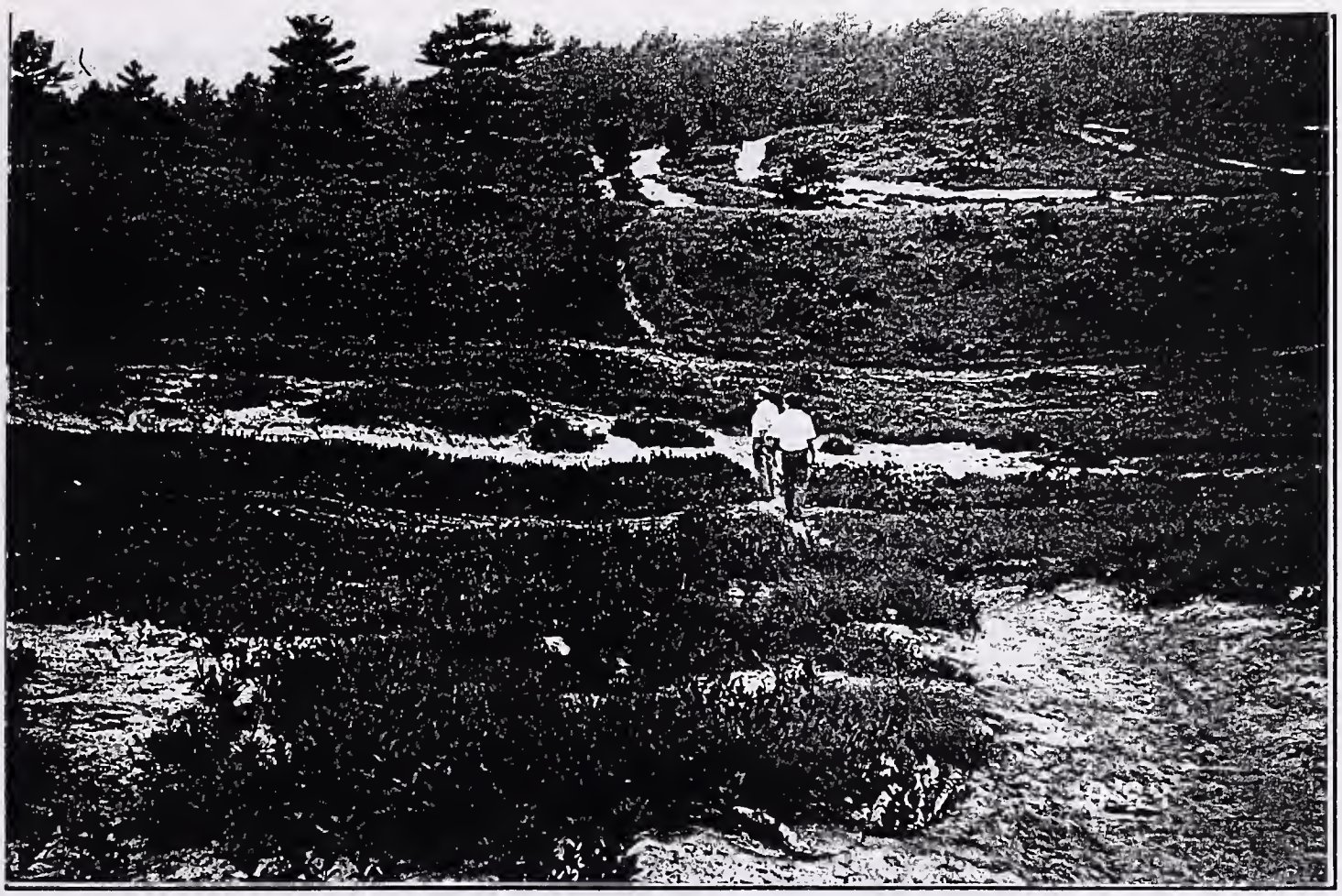
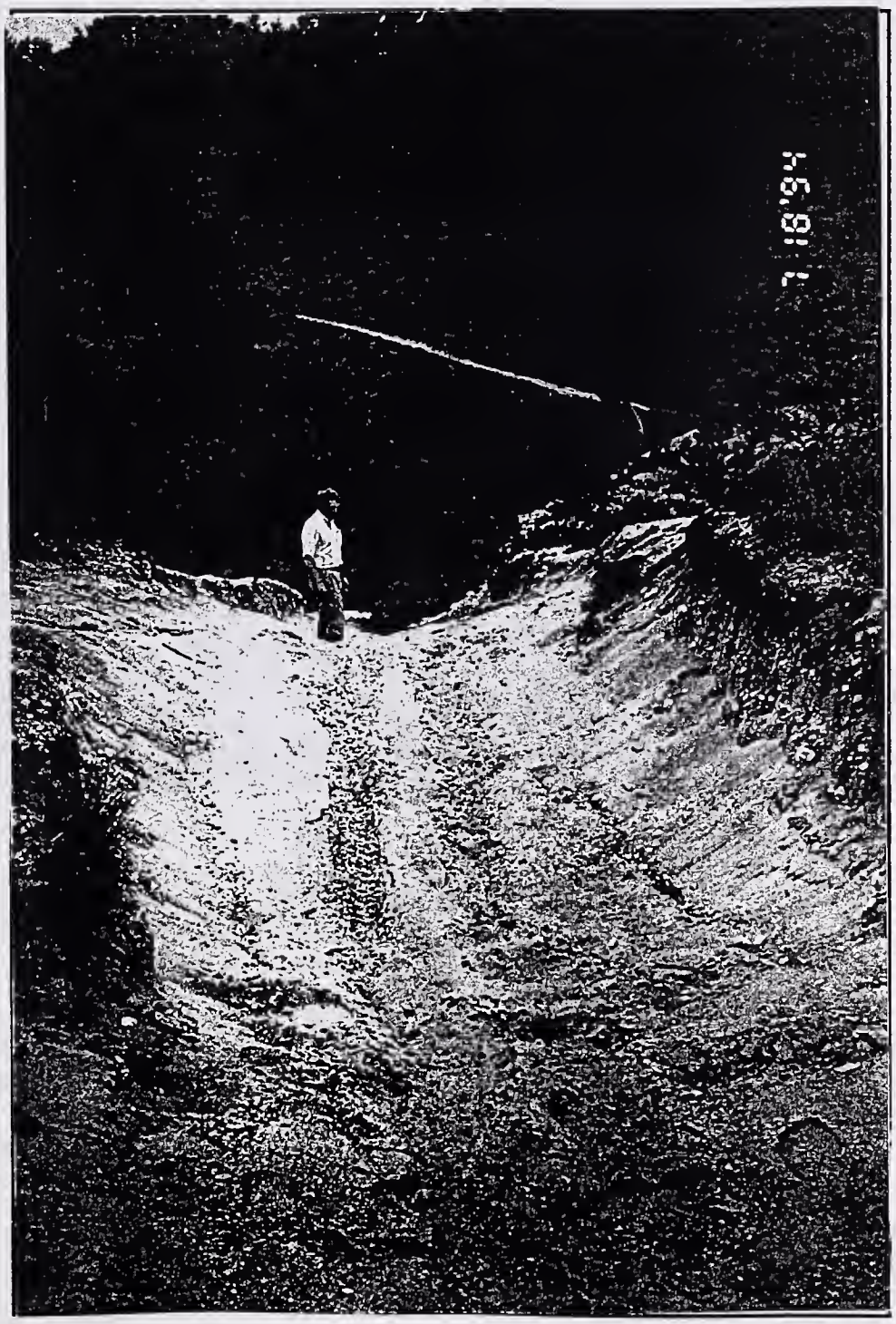


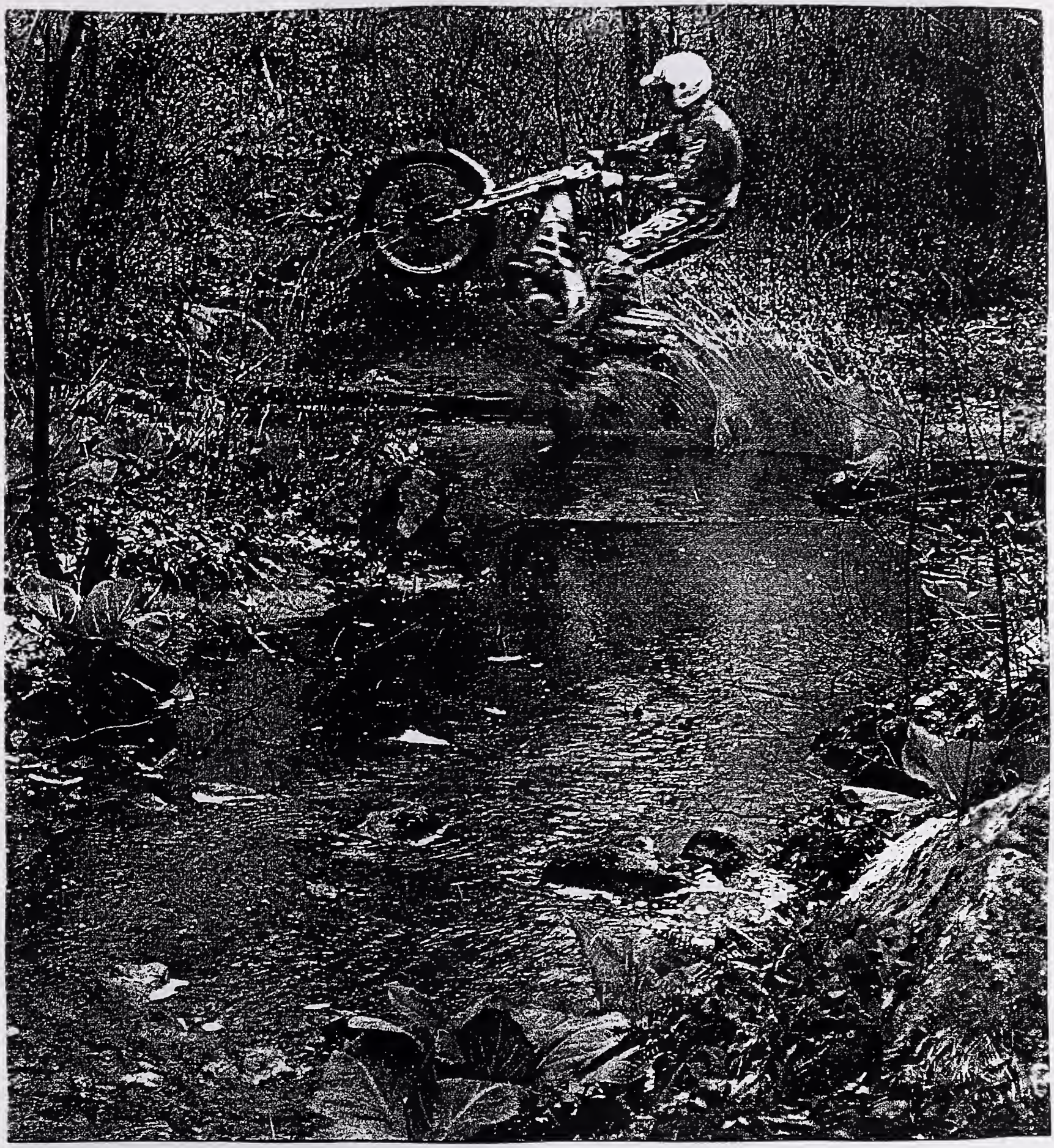
Fig. 3



MYLES STANDISH STATE FOREST 7/18/94

"The Bowl:" When thin, brown topsoil layer is broken, sandy soil beneath quickly erodes.

Fig. 4



Wetland Impacts
(Mass Audubon photo)

Fig. 5

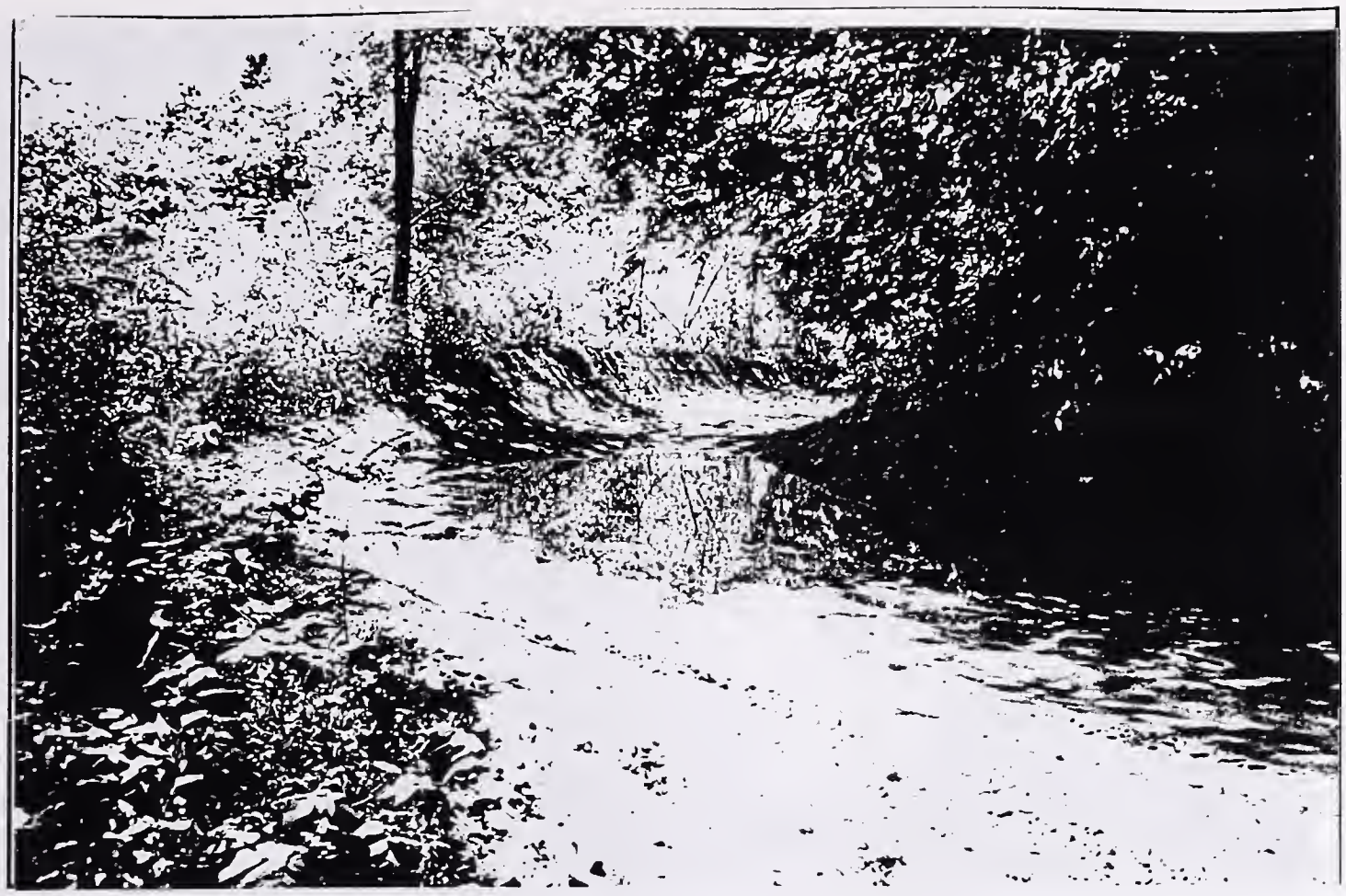


Fig. 6

Banked corner with mudhole

OTTER RIVER STATE FOREST

9/10/94

Vehicles drive through and across Millers River. Opposite bank eroding into channel.

Fig. 7

Fig. 8

Trail eroded into 5' deep trench
Shear forces, running water
acting on sandy soil

(bicycle appears for scale)

FREETOWN STATE FOREST

Loose, cobbled trail surface -
erosion occurring on slope
(E. Castro photo)

Fig. 9

Fig. 10

SAVOY MT. STATE FOREST
Standing water 8/17/95

OCTOBER MOUNTAIN STATE FOREST 9/12/95

Cobbled trail surface after finer soil particles lost down-slope.

Fig. 11

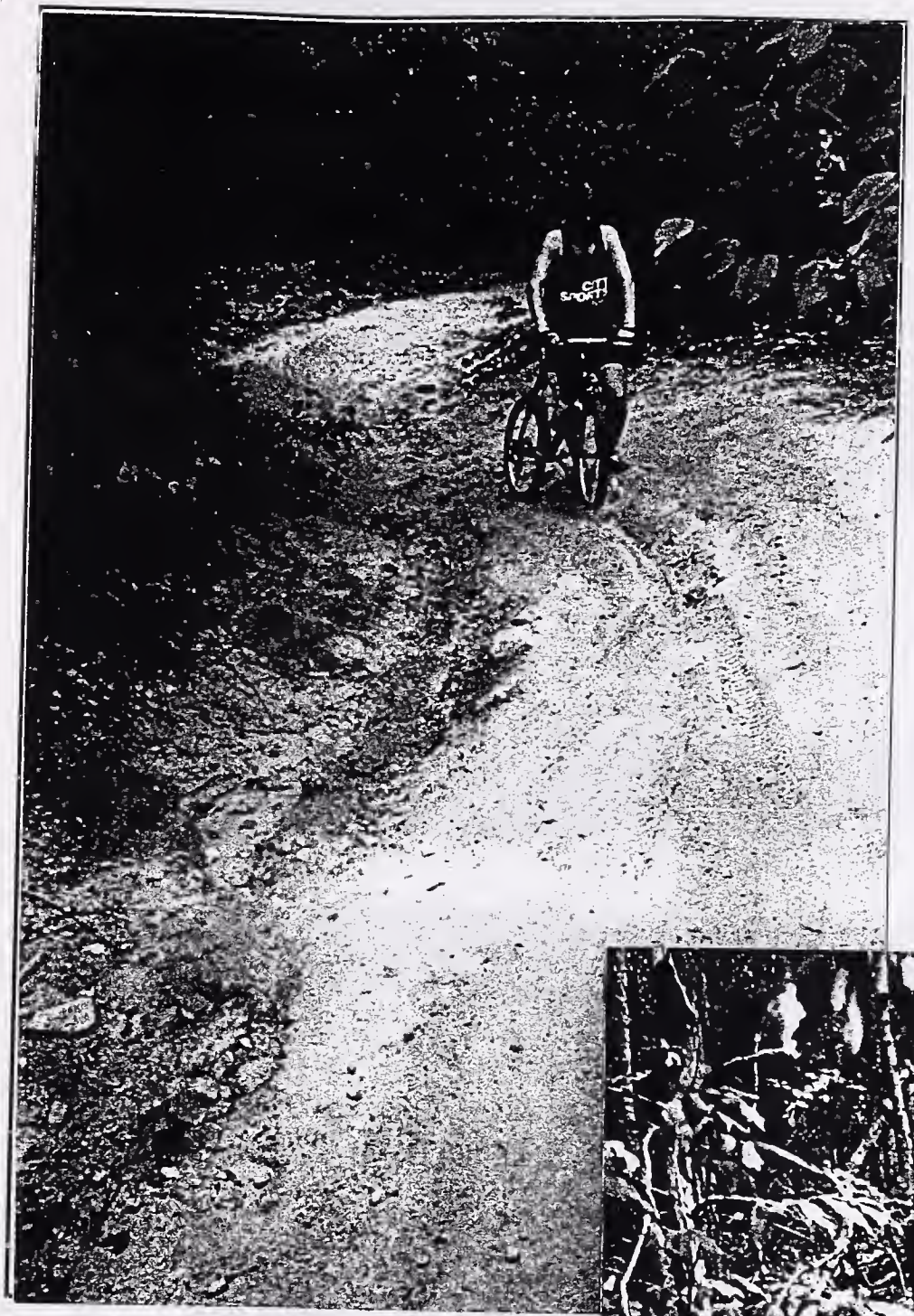


Fig. 12

BRIMFIELD SATE FOREST

8/4/94

Shear forces loosen sandy soil, which washes downslope

Illegally cut new trail

Fig. 13

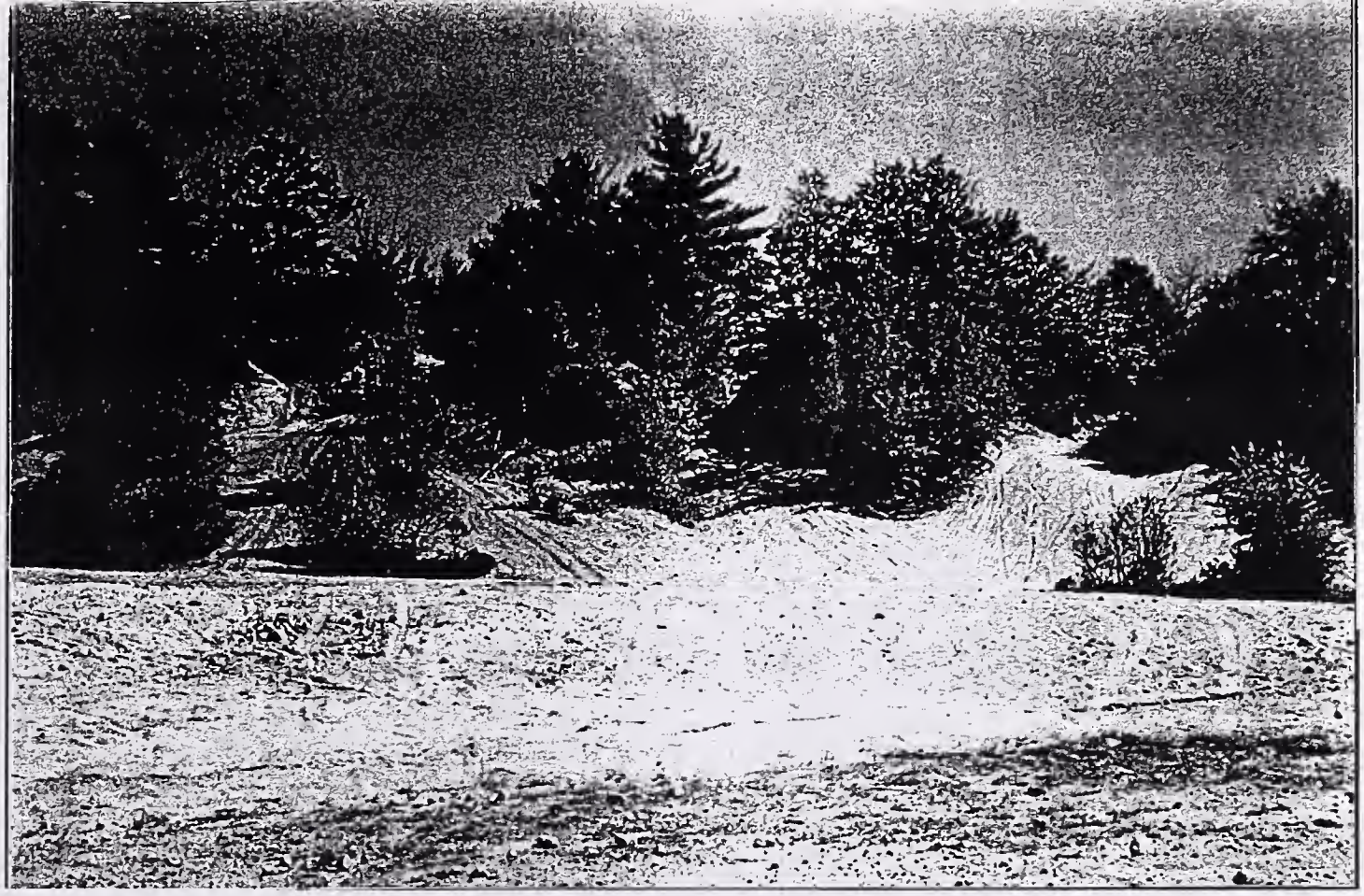


Fig. 14

Use on sandy soils
accellerates erosion

OTTER RIVER STATE FOREST
9/18/95

Trail crossing Route 2 East and
into State Forest

Fig. 15

Fig. 16

Trail widening - "braiding"
Note exposed roots

FREETOWN STATE FOREST
10/5/94

Motorcycle ruts, standing water

Fig. 17

Fig. 18

Deep ruts, severed roots

SAVOY MOUNTAIN
STATE FOREST
(photos taken August 17-18, 1995
peak of drought)

Mudhole - rutting, trail widening

Fig. 19

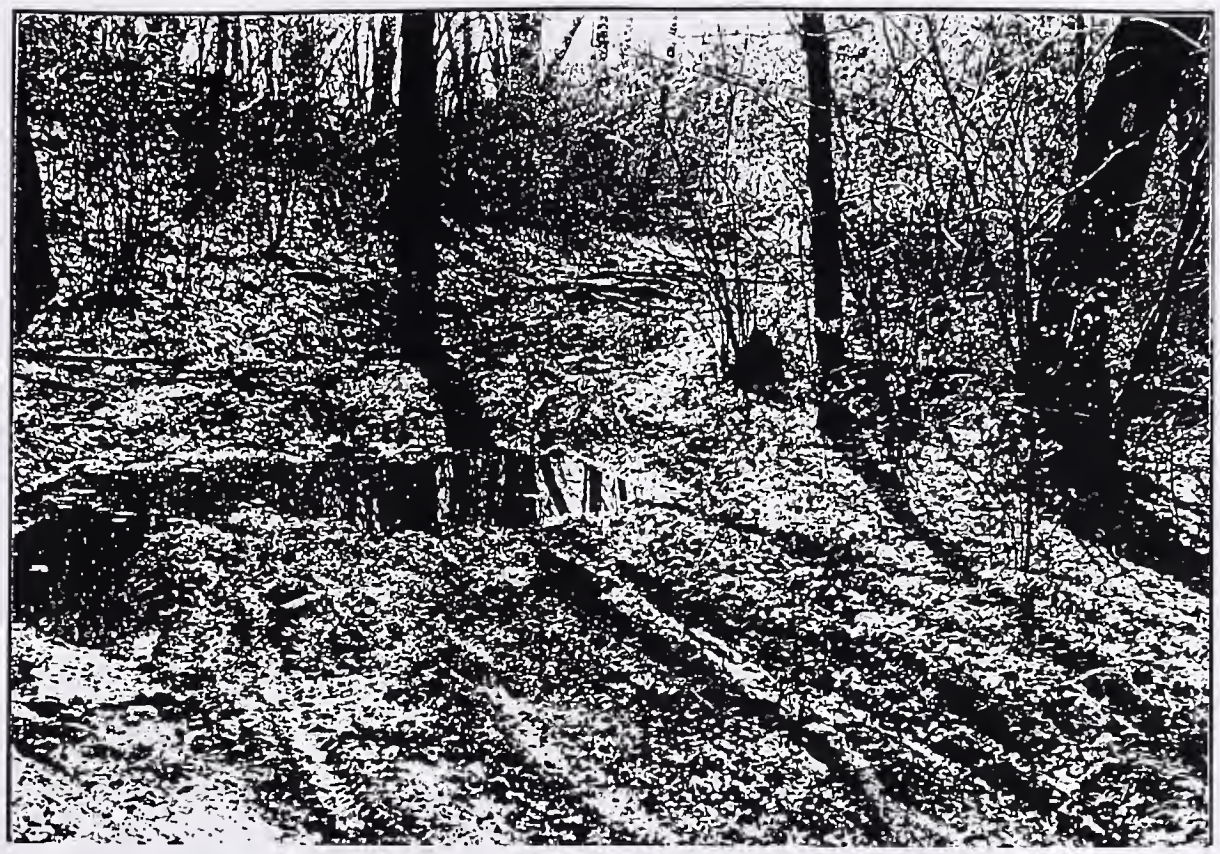


Fig. 20

"Mud Season" impacts - early Spring
(L. Anoli photo)

GEORGETOWN-ROWLEY STATE FOREST 7/24/94

Rutting on Bay Circuit Trail
(not designated for ORVs)

Fig. 21

Fig. 2

Taconic Skyline Trail - widened
to about 60', evidence of compation
forces (mudhole), shear forces
(fresh track on R.)

PITTSFIELD STATE FOREST
(photos taken August 21, 1995
peak of drought)

Green water has been standing
a long time - permananent mudhole

Fig. 23

Fig. 26

Freshly cut, unauthorized trail
(note machete-blazes on tree)

**MYLES STANDISH
STATE FOREST**

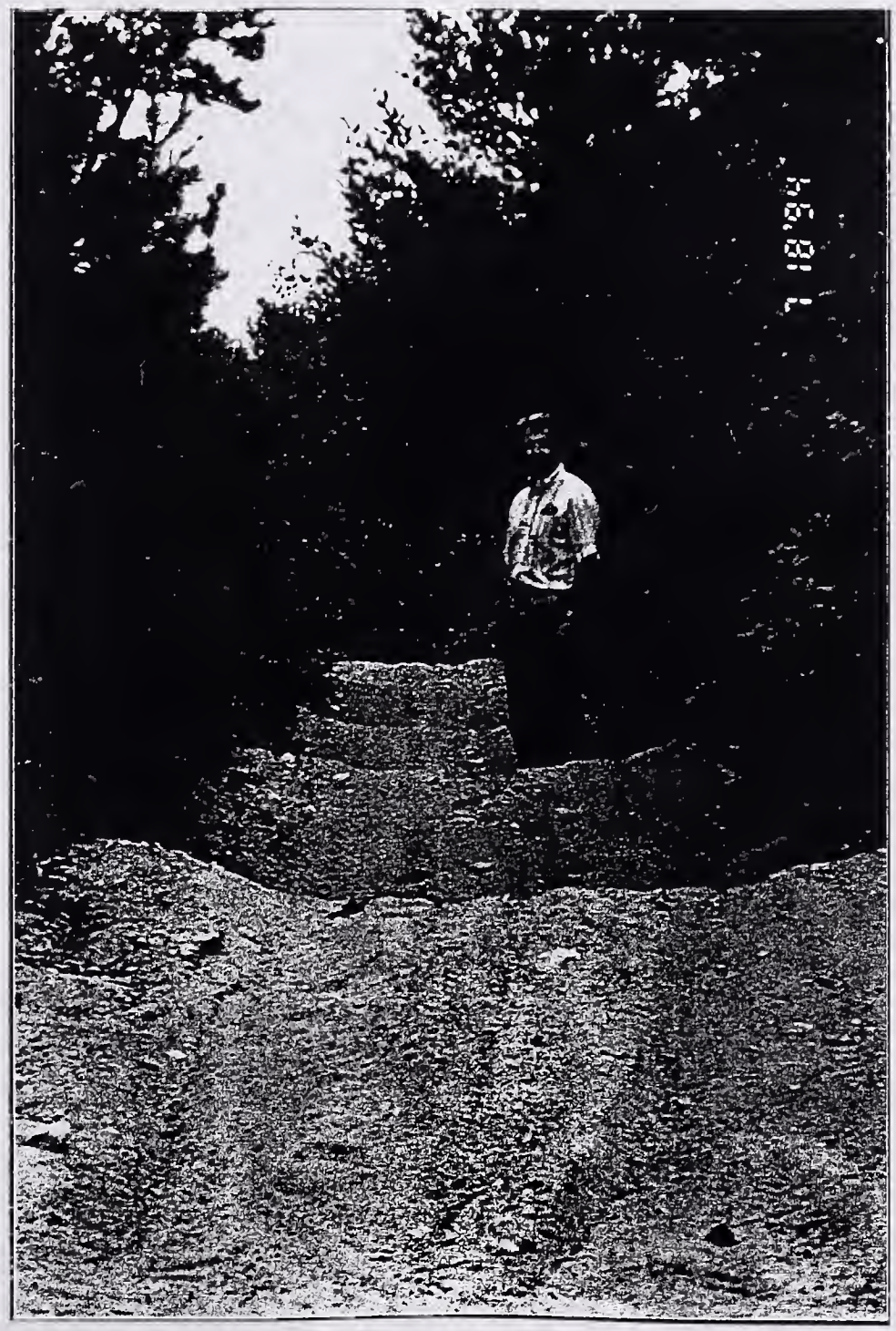
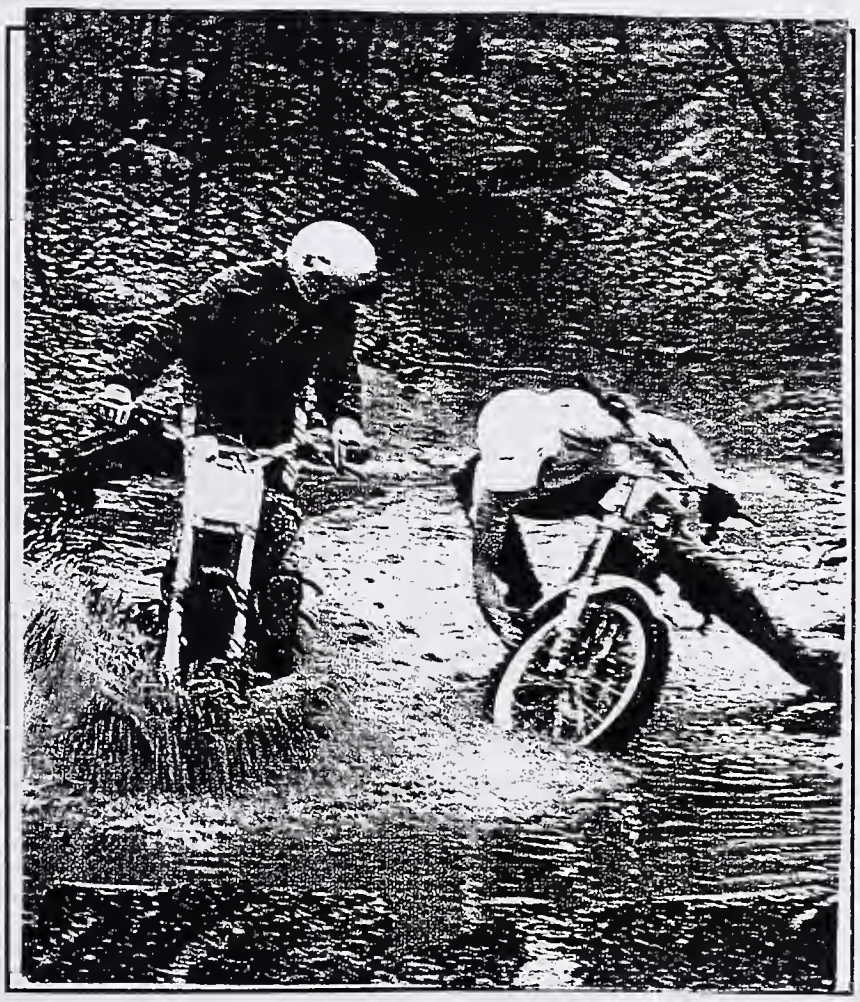


Fig. 25

"Moguls" easily created in
sandy soil.

Fig. 24



Soil compaction = mudholes
(Mass Audubon photo)